

Yolo Bypass Interagency Working Group

**California Department of Fish and Game
California Department of Water Resources
National Marine Fisheries Service
US Fish and Wildlife Service**

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Yolo Bypass Conceptual Aquatic Restoration Opportunities: Keeping Yolo Bypass Users Whole While Improving Aquatic Conditions

The following describes potential northern Yolo Bypass (above Little Holland Tract) aquatic restoration opportunities. The CALFED Ecosystem Restoration Program Implementing Agencies (CDFG, USFWS, NMFS) in cooperation with the DWR, are evaluating the feasibility of implementing the following opportunities. These opportunities were developed through consultations with participating agencies of the Yolo Bypass Interagency Working Group (YBIWG).

The YBIWG acknowledges key issues, interests, and concerns raised during previous discussions with stakeholders and evaluates potential restoration opportunities with these issues in mind. The YBIWG intends to keep all users and interests whole.

The mission of the YBIWG is to improve conditions for native fish species (particularly State and federal Threatened and Endangered fish species and species of special concern) in the Yolo Bypass, thereby enhancing populations and recovery efforts while maintaining or improving existing conditions for land management.

This document focuses, at a conceptual level, on the sequential development of potential restoration opportunities in the northern Yolo Bypass. The set of potential restoration opportunities is provided to foster discussion among public entities and stakeholders interested in the northern Yolo Bypass. YBIWG Stakeholder Outreach will involve: presenting conceptual restoration opportunities, seeking stakeholder input to guide further actions, and, in concert with stakeholders, developing an appropriate restoration plan that maintains or improves conditions in the Yolo Bypass for native fish and bypass users.

The YBIWG has identified the following potential restoration opportunities for further evaluation:

- **Putah Creek** – Lower Putah Creek stream realignment and floodplain restoration for fish passage improvement and multi-species habitat development on existing public lands.

- **Lisbon Weir** – Modify or replace the weir to Improve the agriculture and habitat water control structure for fish, wildlife, and agriculture; reduce maintenance.
- **Additional multi-species habitat development** – Provide for controlled localized seasonal inundation on more frequent intervals; identify areas of opportunity only on: the Wildlife Area; other existing public lands; and private lands where cooperative agreements with willing land owners provide mutual benefits.
- **Tule Canal connectivity** – Identify passage impediments (e.g. road crossings and impoundments); work with land owners to develop the best options for improving fish passage and ensuring water diversion capability.
- **Multi-species fish passage structure**– Investigate the redesign of the existing fish ladder; evaluate the feasibility of constructing a new fish passage structure, operated to ensure: continued maintenance of flood capacity; no substantial changes in timing, volume, and/or duration of flow; and minimal disturbance to existing land use and agricultural practices.

Biological monitoring will be implemented as necessary and may be used to guide future actions and adaptive management.

Multi-species restoration opportunities discussed here are presented in a sequential order of completion. For the full value of the proposed restoration opportunities in the Yolo Bypass to be realized, the following ordered scheme should occur.

Step 1 - Putah Creek

Evaluate and develop a plan for the realignment and restoration of lower Putah Creek. The area proposed for restoration is within existing public lands. The realignment has the potential to create 130 to 300 acres of shallow water habitat. Benefits would include improved salmonid immigration and emigration to and from Putah Creek, an increase in avian (shorebird and waterfowl) habitat, increased aquatic and riparian habitat for other native species, as well as a significant enhancement to existing fish habitat in and around Putah Creek.

Goals:

- Improve passage, rearing, and emigration of adult and juvenile salmon and steelhead in Putah Creek.
- Provide diverse aquatic and riparian habitats for shorebirds, ground nesting birds, waterfowl, plants, invertebrates, plankton, and spawning and rearing of native fish species.

Step 2 – Lisbon Weir

Modify or replace Lisbon Weir to provide better fisheries management opportunities in Putah Creek and the Toe Drain, while improving the reliability of

agricultural diversions and reducing maintenance requirements. A conceptual example of the synergistic benefits of these proposed restoration actions is the idea that improving Lisbon Weir's reliability for agricultural diversions could increase flexibility in water distribution, thereby allowing for greater attraction flows to be released down the realigned Putah Creek.

Goals:

- Improve irrigation water distribution system to benefit fish and wildlife, and agriculture.
- Improve likelihood of adult fall-run Chinook immigration to Putah Creek
- Reduce delay and possible stranding of adult steelhead, Chinook salmon and sturgeon, when passable conditions to the Sacramento River exist.
- Reduce delay of juvenile salmonid emigration within the Toe Drain.

Step 3 – Additional multi-species habitat development

Expand existing shallow water habitat for various species including juvenile native fish. Additional multi-species habitat could be developed through the excavation of a low shelf along a limited portion of the Toe Drain and through small scale setback levees, or by other unidentified means. Restoration opportunities for the development of additional seasonal shallow water habitat, where opportunities exist, may occur on:

1. Undeveloped lands within the Yolo Bypass Wildlife Area.
2. Other undeveloped public lands within the Yolo Bypass.
3. Private lands where cooperative agreements between the implementing agencies and the landowners provides mutual benefits.

Goals:

- Increase rearing habitat available to juvenile steelhead, Chinook salmon, and splittail.
- Increase shallow water habitat availability for multiple species (fish, wildlife, plankton, and others).

Step 4 – Tule Canal Connectivity

Identify areas of stranding adjacent to the Fremont Weir. Evaluate the feasibility of improving connectivity between the Fremont Weir, the Fremont Weir scour ponds, and the Toe Drain to reduce stranding of adult and juvenile fish. Identify seasonal road crossings and agricultural impoundments in the northern Yolo Bypass that impact wetted habitat connectivity, immigration, and emigration of fish species utilizing the Yolo Bypass. Develop conceptual approaches for the modification of crossings and impoundments to improve fish passage while ensuring continued water diversion capability.

Goals:

- Reduce delay and stranding of adult steelhead, Chinook salmon, and sturgeon immigrating within the Yolo Bypass
- Reduce delay and overall losses of juvenile Chinook salmon and steelhead emigrating within the Yolo Bypass.

Step 5 – Multi-species fish passage

Evaluate the feasibility and appropriateness of providing fish passage improvements in and along the Fremont Weir. Appropriate operational constraints would guide plan development and would ensure:

1. Continued maintenance of flood conveyance capacity.
2. No substantial changes in timing, volume, and/or duration flow.
3. Minimal disturbance to existing land use and agricultural practices.

Restoration opportunities may include the addition of a new, controlled multi-species fish passage structure at the eastern edge of the Fremont Weir. Additionally, restoration opportunities may include improvements along the existing weir face and apron to facilitate sturgeon passage along the length of Fremont Weir without introducing any additional flows. Conceptual designs for this option could include rock ramps that would provide a gradual slope up the face of the weir. In addition to the installation of new fish passage structures, the existing fish ladder will be analyzed to determine if modifications could allow for a greater range of fish species passage.

Goals:

- When present in the northern Yolo Bypass, improve immigration and emigration (reduce delay and stranding) of adult and juvenile fish (steelhead, Chinook salmon, and sturgeon).

The intent of the YBIWG is to keep all users and interests whole. The YBIWG identified potential restoration opportunities with consideration to the following areas of concern:

- Agricultural operations and lifestyle
- Flood control
- Educational activities
- Public and private waterfowl management operations and lifestyle
- Water quality
- Wildlife Area infrastructure investments
- Wildlife management operations
- Recreation
- Vector control
- Benefits to fish

The YBIWG is open to considering additional areas of concern that may be identified through additional stakeholder outreach. Conceptual restoration opportunities were developed to keep all users and interests whole. To this end, restoration opportunities that significantly changed the timing and/or duration of flow, or that resulted in substantial new regulation of the Yolo Bypass, were eliminated from further consideration.